STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

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SECRETARY

North Carolina Board of Transportation
Environmental Planning and Policy Committee
Meeting Minutes for July 7, 2004

A meeting of the Environmental Planning and Policy Committee (EPPC) was held July 7, 2004 at 8:30 AM in the Board Room (Room 150) of the Transportation Building. Nina Szlosberg chaired the meeting. Other Board of Transportation members that attended were:

Tom Betts	Doug Galyon
Conrad Burrell	Cam McRae
Bob Collier	Andy Perkins
Marion Cowell	Lanny Wilson

Other attendees included:

Martin Barna	Mike Holder	Cynthia D. Muldrow
Bryant Blair	Julie Hunkins	Jon Nance
Valerie Brodwell	Berry Jenkins	Allen Pope
Lori Cove	Neil Lassiter	David Robinson
Ken Creech	Don Lee	Patrick Simmons
Craig Deal	Sharon Lipscomb	John Sullivan
Eddie Dancausse	April Little	Greg Thorpe
Lisa Glover	Ehren Meister	Jim Trogdon
Rob Hanson	Mike Mills	Ron Watson

Ms. Szlosberg called the meeting to order at 8:30 AM and accepted a motion to approve the meeting minutes from the May committee meeting as presented. The minutes were approved.

Ms. Szlosberg opened with several remarks on the increased commitment that the Board of Transportation has made towards air quality in recent years. She noted that Governor Easley signed the "Clean Smokestacks Act" addressing fixed sources of air pollution, and has been particularly adamant that special attention be paid to the issue. However, this groundbreaking measure does not control mobile sources of air pollution, which are responsible for over half of the current problem. Governor Easley has requested that the Board of Transportation continue to examine the problem of automobile emissions. Moreover, the recent changes in conformity standards have made the entire issue slightly more confusing.

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Ms. Szlosberg indicated that an expert presentation from an EPA agent on the subject might be beneficial for the Board to better understand air quality conformity issues and new requirements. Ms. Szlosberg introduced Valerie Brodwell, a Transportation Planner who has worked with the EPA for fourteen years. Ms. Brodwell's specializes in ozone, air pollution and other atmospheric topics.

Ms. Brodwell outlined the contents of her presentation, encouraging Board members to ask questions throughout the presentation. The presentation began with several photographs of air pollution prior to governmental regulation. The government first began to address air pollution in the 1940's and 1950's, and increasingly stringent regulations have been passed in subsequent decades. The most effective of these programs was the Clean Air Act of 1990.

There are two types of ozone that are present in earth's atmosphere. Stratospheric, or "good", ozone is located higher up in the atmosphere and protects life from UV radiation. The problem with stratospheric ozone is that it is being depleted by chlorofluorocarbons (CFC's). Tropospheric, or "bad", ozone is located in the air close to the earth's surface and is a secondary pollutant, meaning that it is formed in the air. The four ingredients that are required to create tropospheric ozone are sunlight, nitrogen oxide, VOC's, and heat. Tropospheric ozone is more regional in nature than particulate matter, having a tendency to spread itself out instead of forming "hot spots".

There are numerous health effects associated with "bad" ozone. A few of the most significant are respiratory difficulties in children (asthma), exacerbation of congestive heart failure, and bronchitis. There are certain populations that are particularly vulnerable to the health problems that are induced by ozone. These groups include children, outdoor workers, individuals with pre-existing conditions, and individuals with increased sensitivity.

Ms. Szlosberg asked if there have been any research studies conducted on outdoor workers and any of these health problems in light of the fact that they are often working under dangerous conditions. Ms. Brodwell was not aware of any such studies but indicated that outdoor workers might be exposed to slightly increased levels of particulate matters due to the nature of their work.

Ozone comes from natural sources, but it is the man-made components that create the majority of the problems. It is formed in the atmosphere from the collaboration of heat, ultraviolet light, nitrous oxides, and VOC's. Nitrous oxides and VOC's, referred to as ozone precursors, are released by a variety of sources, including oil refineries, power plants, and automobiles. VOC's are also released whenever automobiles are refueled at gas stations. Several states have countered this source by installing sleeves at gasoline pumps that capture these precursors before they are released, as part of the "Stage II Vapor Recovery".

Ms. Szlosberg asked if the sleeves were required by state law. Ms. Brodwell responded that the sleeves are only required by law in serious, severe, and extreme ozone attainment areas such as Washington, DC.

The largest amount of VOC emissions are released in the first two minutes after an automobile engine is started. These are called “cold start emissions”. VOC’s are also are released from automobile engines when they have been running for an extended period of time. These chemicals are commonly known as “hot soak emissions”.

One common misconception about air pollution is that natural sources, particularly trees in the South, are responsible for a large part of the ozone problem. While these trees do generate some biogenic VOC’s, they cannot create ozone without the nitrous oxides, and cutting down entire forests of these trees is entirely implausible. The best strategy, therefore, is to remove nitrous oxides from the air so that the “bad” ozone cannot be created. Many of the areas in the Southeast United States, including Raleigh, have been designated as “Nitrous Oxide-Limited Areas”.

There are many reasons for reducing the nitrous oxides that are released from man-made sources as opposed to cutting down on the biogenic VOC’s that are released from trees. One reason is that the urban heat island effect is mitigated by trees, making urban climates much more hospitable. Another point is that trees help to save money on energy costs by keeping buildings cooler during summer months. Trees also increase aesthetic appeal of trees in urban settings. Areas with more trees typically are popular locations for pedestrians, and bicyclists. Increased traffic can stimulate economic value and quality of life in these areas. Trees, however, have a few negative aspects as well. Other than biogenic VOC’s, tree maintenance, especially the use of chain saws and leaf blowers, releases pollutants into the atmosphere. Yet, it would be impossible to safely cut down enough trees to reduce the problems associated with VOC’s. Ms. Brodwell summed the issue up nicely by pointing out that in the last two hundred years, we have seen significant deforestation accompanied by the emergence of personal automobiles. There was no ozone problem two hundred years ago so it would seem that man-made emissions are the problem.

Next, Ms. Brodwell produced a pie chart that illustrated the national sources of VOC’s and nitrous oxides. She noted that the Triangle Area’s nitrous oxide sources are slightly different than the national distribution. Vehicular emissions in the Raleigh area account for a slightly larger percent of the nitrous oxide emissions than the national average. She went over a number of other smaller sources of VOC’s including furniture-making, paint-coating, and plastic production. Another reason to control VOC’s is that they are associated with various forms of cancer.

The good news is that individual automobile emissions have decreased. Automobiles today are approximately 75 percent cleaner than those that were built twenty to thirty years ago. Unfortunately, the large increases in vehicular miles traveled (VMT’s) have offset any improvements that new emissions technology may have provided.

The current structure under which the air pollution problem is being dealt with is the Statewide Implementation Plan (SIP). This plan includes all laws and regulations concerning air pollution programs. These extensive plans are available to the public and are under constant revision. The first step to creating a SIP is establishing an acceptable emissions budget that meets conformity standards. This initial baseline estimate is called an emissions inventory. Next, growth factors are input into various

models that generate an emissions projection. This projection, which becomes the emissions budget, must meet ozone standards. There are three main categories that must be considered: area sources (gas stations), stationary sources (power plants, oil refineries), and mobile sources (cars). An example of a city with a relatively large amount of stationary sources is Baton Rouge, Louisiana. On the other hand, Los Angeles has a much higher amount of mobile sources relative to their stationary sources.

Ms. Szlosberg questioned the term "emissions budget", observing that it might be more accurate to refer to the projections as a "pollution budget". Ms. Brodwell responded that the term had just evolved in that manner of perception.

Ms. Brodwell went on to describe the elements of a SIP. Each state's SIP varies according to their distribution of sources. For example, California's relatively high amount of mobile sources would be a prime SIP target. The SIP may include controls on transportation emissions, industrial sources, Stage II Vapor Recovery, and nitrous oxides, which were the target of North Carolina's recent "Clean Smokestacks" legislation.

As part of the Clean Air Act of 1990, the EPA is required to designate areas that fail to meet ozone standards as areas of "non-attainment". There are over 800 ozone monitors running continuously throughout the country. These monitors determine whether or not a particular area is meeting the federal ozone standards. In 1997, a stricter 8-hour ozone standard was passed and the entire country was redesignated. Ms. Brodwell presented a national map that showed the various regions failing to meet the new standard. The areas that typically struggle to meet the standards are the Northeast, Midwest, the Western Carolinas, Texas/Louisiana, and Southern California.

Board Member Tom Betts inquired about the difference between North Carolina and Virginia, noting that Virginia appeared to have far fewer areas of non-attainment. Ms. Brodwell answered that there was no one reason, but cited a relative lack of big cities and coastal proximity as large contributors. She went on to point out that there is a multitude of factors that affect conditions in various regions so it is often difficult to explain the difference between two seemingly similar states. Ms. Szlosberg asked if weather patterns were responsible for Florida being one of the cleanest states on the map. Ms. Brodwell affirmed that weather patterns were the main cause in Florida's case.

Mr. Betts asked if certain areas are doomed to non-attainment merely due to their location. He wonders if there is anything that an area can do to reduce the problem or if it is inevitable. Ms. Brodwell agreed that the presence of trees is partly to blame but reminded the Board that there were no ozone problems two centuries ago so, so it would seem that something is causing the problem, and that something must be curtailed.

Board Chairman Doug Galyon inquired about the effects of the "jet stream" on the movement of polluted air. He notes that heard that TVA Generating Plants in Tennessee have not met pollution standards and that they might be having an adverse impact on air quality in North Carolina. Ms. Browell assured the Board that the TVA Plants are being held to the standards, but agrees that pollution

transport is a common problem; wind patterns often push polluted air from industrial areas into neighboring states. In some instances, the EPA has placed additional nitrous oxide regulations on large plants in areas that are prime sources for transport pollution.

Ms. Szlosberg requested that a distinction be made between acid deposition and ozone issues – particularly in light of recent problems with dead trees. Ms. Brodwell indicated that the dead trees were most likely a consequence of both acid deposition and ozone effects. Acid deposition involves the permeating of toxic chemicals (primarily sulfur dioxide from power plants) into lakes and streams. This new chemical results in an increase in pH and wreaks havoc on local ecosystems. Ms. Szlosberg asked if such pollution could be drifting into the mountains of North Carolina from Tennessee. Ms. Brodwell could not confirm this claim and suggested that regional programs to address the problem is the way to address the problem. There has been tremendous progress since 1990 with large decreases in carbon monoxide, lead, and ozone problems. The Clean Air Act of 1990 has been highly effective but there still is a long road ahead.

Ms. Brodwell, referring back to the national map, ran through several regions that have achieved attainment standards due to wind patterns. Ms. Szlosberg commented that the polluted air has to go somewhere and wondered what happens to the toxic chemicals released in areas such as Florida and Hawaii. Ms. Brodwell responded that the particles drift out to sea, rain down, and cleanse themselves out. She added that ozone particles eventually break apart.

Next, Ms. Brodwell presented another national map illustrating wind patterns throughout the continental United States in the summer of 1991. The general trend is that winds move eastward, but the worst conditions emerge when the winds remain fairly stationary, creating extremely unhealthy air.

Ms. Szlosberg asked why there has been such a spike in the number of children admitted to hospitals for asthma when the problem has remained stable due to the improvements in pollution technology. Ms. Brodwell attributed the problem to large increases in urban populations, meaning that more people are vulnerable.

Meeting attendee, Pat Simmons, referred back to the wind pattern map and asked how it might be different if it had been recorded in the present and during the non-summer months. Ms. Brodwell was unsure, but said that there would not likely be a significant change in the prevailing winds; however, there might be more hot spots in urban centers such as Los Angeles, Chicago, New York, Atlanta, and Houston. Ms. Brodwell next focused on the Triangle area's current attainment status. The entire MSA, with the exception of a small portion of Chatham County, has been designated by the EPA as a non-attainment area for air quality standards.

Board Member Conrad Burrell commented that Smoky Mountains National Park was recently ranked as the most polluted national park in the country despite the fact that there are no major urban centers in its close proximity. He was curious as to where the pollution might be coming from. Ms. Brodwell listed several potential causes including increasing vehicular traffic in the park, warmer climate conditions and transport pollution from cities such as Knoxville. She went on to state that meteorology, or the summer

heat, coupled with increasing VOC levels, was probably responsible. Mr. Burrell followed up by asking if there was a direct connection between automobile pollution and the death of trees. Ms. Brodwell confirmed that vehicular emissions have negative effects on trees. She stressed that there are many hidden costs associated with ozone. Ozone can destroy trees, ruin crops, and damage buildings – all of which cost money to fix or replace. Thus, the problem results from a combination of inputs.

Ms. Szlosberg then asked Mr. Burrell if there had been any discussion of the economic impact of pollution in the Smoky Mountains. Mr. Burrell replied that there had been serious concern that tourism would be negatively impacted – particularly over the summer months, when air pollution levels tend to peak. A considerable decline in tourism would have a large negative impact on the region's economy. Additionally, there has been an increase in respiratory problems in the area.

Ms. Brodwell noted that the Grand Canyon National Park had experienced similar problems several years ago. In that situation, high levels of air pollutants substantially decreased visibility, making it difficult for tourists to see across the Canyon. A multi-state effort increased controls on power plants in the area and effectively cleaned up the situation. Ms. Brodwell suggested that a similar effort might be undertaken in the Smoky Mountain region.

Ms. Szlosberg commented that Governor Easley has met regularly with governors of other southern states as part of a series of summits on air quality. Ms. Brodwell noted that this was a great way to begin to address the problem on a regional level.

There is a helpful section on the Federal Register web site that classifies areas throughout the entire country as attainment or non-attainment for those who are interested.

Ms. Brodwell next brought up the Clean Air Act of 1990. The largest improvement in this new legislation was that areas were classified based on the severity of the air pollution. Based on design values that show concentrations of pollutants, areas were designated as "marginal", "moderate", "serious", "severe" "extreme". Only Los Angeles was designated as "extreme". The Raleigh-Durham area was listed as "moderate". Based on this classification, more or less controls are required of an area. Thus, Los Angeles has the most stringent restrictions on sources of air pollution.

Transportation Conformity is another important subject that must be addressed. A frequent misunderstanding local governments have with the EPA is that highway funds are lost as soon as an area is designated as "non-attainment". This is not how the actual process functions. The purpose of the conformity is to ensure that all transportation projects conform to the SIP emissions budget. Some projects will increase emissions while others will decrease it. In the process, funding is withheld for projects that will not fit within the total emissions budget upon implementation. Transportation conformity updates must be performed at least every three years, but are done every two years in most areas. The items that are updated are the long-range transportation plan and the Transportation Improvement Plan (TIP), which is specifically focused on projects that will be implemented in the next few years.

A “lapse” is a common situation that occurs when an area does not meet its conformity standards. The most frequent cause of lapses is failure to meet a deadline – not an inability to control emissions. Certain transportation improvement projects, such as transit improvements, sidewalks, bicycle lanes, safety efforts and previously approved projects, can receive funding during a lapse. During a lapse, however, projects that are not included in the SIP cannot be built, and project phases that have not been approved under the TIP cannot proceed. Lapses are usually resolved fairly quickly.

The next level of regulation is called a “freeze”, which is fairly rare. In addition to transportation conformity problems, a freeze can result from an incomplete SIP. For example, if an area does not have any tailpipe regulations, it may face a federal freeze. Only projects that are in the first three years of the TIP may proceed during a freeze. The freeze condition may last for as long as 18 months, at which point, if the problem is not resolved, stricter stationary source sanctions are put into place. Six months later, highway sanctions are applied, meaning that sanctioned areas have a full two years to reach conformity standards or fulfill SIP requirements. In the history of these regulations, only one small area in Montana has ever been placed under such sanctions. Ms. Brodwell stressed the point that these situations are rare, and that even if they do occur, some projects may proceed, and the funding for others is withheld, not taken away. MPO’s are responsible for performing conformity demonstrations, and the DOT - not the EPA - presides over the demonstrations.

TEA-21 (the Transportation Equity Act of the 21st Century) is currently being discussed in Congress. TEA-21 determines how federal money will be spent on transportation projects across the country over the next six years. It is currently being delayed due to budgetary concerns in both the House and the Senate. There are seven major categories within TEA-21, including the CMAQ (Congestion Mitigation for Air Quality) improvement program. This piece of legislation will allow federal funds to be used for projects, such as sidewalks, bike lanes, and “Safe Routes to School”, that had previously not been included. Ms. Brodwell asked if there were any questions. There were none, but Ms. Szlosberg showed interest in exploring the “Safe Routes to School” program at a future meeting.

Ms. Szlosberg adjourned the meeting. The next meeting of the Environmental Planning and Policy Committee is scheduled for Wednesday, August 4, 2004 at 8:30 AM in the Board Room (Room 150) of the Transportation Building.

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